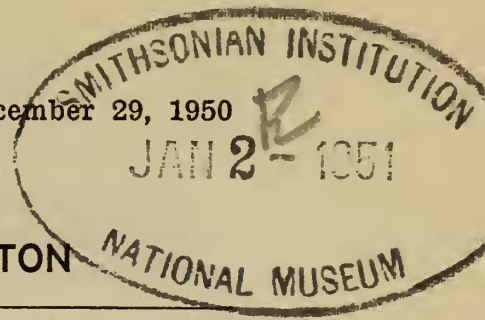


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



NEW FROGS OF THE GENERA *CYCLORANA* AND *HYLA* FROM
SOUTHEASTERN AUSTRALIA

BY ARTHUR LOVERIDGE

The three frogs described below are part of an extensive collection of amphibia made by Mr. J. R. Slevin during 1947-1948. The holotypes, though here bearing the registration numbers of the California Academy of Sciences, are being presented to the Australian Museum¹ in compliance with Australian law, which requires all visiting zoologists to surrender any types they may have collected in that Commonwealth.

With regard to the type localities, Mr. Slevin has kindly furnished me with the following supplementary data: **Noondoo**, a siding for the Noondoo Sheep Station, is about ten miles east of Dirranbandi, terminus of a railway line from Brisbane, consequently close to the border between Queensland and New South Wales. **Ulong**, a small lumber mill village, is about ten miles west of Coramba, which, in turn, lies west of Goffs Harbour on the northeastern coast of New South Wales.

I am indebted to Mr. J. R. Slevin for allowing me to describe these interesting frogs, with the first of which I take pleasure in associating his name.

Cyclorana slevini sp. nov.

Type.—California Academy of Sciences No. 82,052, apparently an immature ♀, from Noondoo, southeastern Queensland near the Queensland-New South Wales border. Collected by J. R. Slevin, September 16, 1947.

Paratype.—California Academy of Sciences No. 82,053, a ♂ with same data as the type, except that it was collected on September 17, 1947.

Diagnosis.—A heavily built, toad-like frog with shovel-shaped inner metatarsal tubercle, distinguished from its nearest relative as follows:

Interorbital space almost twice as broad as an upper eyelid; tympanum nearly equal to the diameter of the eye; toes two-thirds webbed, the web between the third and fourth toes extending to the distal tubercle of the fourth toe; range: known only from Noondoo, southeast Queensland

.....*slevini*
sp. nov.

Interorbital space at most equals the width of an upper eyelid; tympanum half to two-thirds the diameter of the eye; toes one-third webbed, the web between the third and fourth toes never extending as far as the

¹The Australian Museum has renumbered these specimens as follows:

R. 13,816 for the Paratype of *Cyclorana slevini*
R. 13,818 for the Type of *Hyla kinghorni*
R. 13,817 for the Type of *Hyla a. ulongae*

second tubercle of the fourth toe; range: north
 Western Australia; Northern Territory; northern
 Queensland (as far south as Rockhampton) *australis*
 (Gray)

Description.—Build stout. Head much broader than long (in both these specimens as broad as the distance from end of snout to axilla); snout depressed, twice as long as the eye; nostril equidistant between end of snout and eye; canthus rostralis rounded and very oblique; loreal region slightly concave; interorbital space almost twice as broad as an upper eyelid; tympanum distinct, nearly equal to the diameter of the eye; fingers moderate, first opposed to, and longer than, second; subarticular tubercles distinct; palm with small round tubercles; two metacarpal tubercles (swollen, and therefore more prominent in male paratype); toes two-thirds webbed, the *notch* in the web between third and fourth toes well in advance of the distal tubercle of the third and level with the basal tubercle of the fourth; subarticular tubercles indistinct; inner metatarsal tubercle large, shovel-shaped; no outer tubercle; tarsus with a slight dermal fold along its inner edge; tibio-tarsal articulation of the adpressed hind limb reaches the tympanum only (in both type and paratype).

Skin of dorsum shagreened with some inconspicuous, scattered warts towards the flanks; no median occipital-nuchal groove; a more or less distinguishable curved supratympanic fold; dorso-lateral fold absent. Below, throat and breast smooth (in both); belly and hinder side of thighs granular (only slightly so in the male).

Color.—Above olive-gray (plumbeus in male), edge of upper lip white; back, flanks, and limbs finely spotted or vermiculated with brown. Below, creamy white, slightly yellowish on thighs; palms and soles yellowish, minutely vermiculated with brown.

Size.—Total length from snout to anus of holotype ♀, 48 mm.; of paratype ♂, 40 mm.

Remarks.—My sexing of the male has been confirmed by Drs. Ernest Williams and Paulo Vanzolini. These frogs have been compared with nine specimens of *australis* in the Museum of Comparative Zoölogy, at Cambridge, Massachusetts, besides sundry specimens of *alboguttatus*, including the Alexandra example (M.C.Z. 11,647) that Parker (1940, *Novit. Zool.*, 42, p. 18) listed in the synonymy of *australis*, on the mistaken assumption it was that species.

Hyla kinghorni sp. nov.

Type.—California Academy of Sciences No. 83,234, an adult ♂ from Ulong, northeastern New South Wales. Collected by J. R. Slevin, January 28, 1948.

Diagnosis.—Apparently most nearly related to *Hyla latopalmata* from which it may be distinguished as follows:

Canthus rostralis sharply angular; interorbital space two-thirds the width of an upper eyelid; vomerine teeth in two juxtaposed groups; first finger as long as second; toes from first to fifth have $\frac{1}{2}$, 1, 1, $1\frac{1}{2}$, and 0 terminal joints respectively free of web
kinghorni sp. nov.

Canthus rostralis obtusely rounded; interorbital space $1\frac{1}{4}$ - $1\frac{1}{2}$ times the width of an upper eyelid; vomerine teeth well-separated; first finger longer than second; toes from first to fifth have 0, 0, 0, $1\frac{1}{2}$, and 0 terminal joints respectively free of web.....*latopalmata* Günther

Description.—Head as long as broad; snout subacuminate, its length (to anterior corner of eye) equal to the distance separating the anterior corners of the eyes; nostril considerably nearer the end of the snout than it is to the anterior corner of the eye; canthus rostralis sharply angular; loreal region oblique, slightly concave; interorbital space two-thirds the width of an upper eyelid; diameter of tympanum rather more than half that of the eye; tongue large, subcordiform, distinctly emarginate behind, slightly free; vomerine teeth strongly developed in two juxtaposed, slightly oblique groups between the choanae.

Fingers free of web, first as long as second, which is shorter than fourth, which is shorter than the third, disk of third only half diameter of tympanum; toes well webbed, the web extending almost to the disk on the first, to the distal subarticular tubercle on the second and third, as a narrow margin to the distal tubercle on the fourth, and to the disk on the fifth; in other words the terminal joints free of web from first to fifth are, $\frac{1}{2}$, 1, 1, $1\frac{1}{2}$, and 0; subarticular tubercles prominent; an oval inner, but no outer, metatarsal tubercle; tibio-tarsal articulation of the adpressed hind limb reaches beyond end of snout.

Skin above smooth; an indistinct curved supratympanic fold; forearm smooth, without dermal ridge or series of tubercles; being a male there is a partly pigmented nuptial swelling at base of first finger; neither lappet on heel nor dermal ridge along outer edge of foot. Below, throat smooth; breast, belly, and thighs granular.

Color.—Above, pale gray variegated with light-edged black patches that coalesce erratically; from nostril through eye to above forearm an ill-defined dark streak; flanks with a few black spots; thighs with slight marbling on distal half of hinder side only. Below, white, a faint trace of dusky pigmentation around lower jaws; otherwise uniform, becoming yellowish cream on belly and buttocks.

Size.—Total length from snout to anus of holotype ♂, 45 mm.; hind limb 80 mm.

Remarks.—Named for J. Roy Kinghorn, Esq., of the Australian Museum, whose ever-ready helpfulness is known to all visiting herpetologists. This new hylid has been compared with all related form of the twenty-three species of Australian *Hyla* in the collections of the Museum of Comparative Zoölogy, as listed by me (1935, Bull. Mus. Comp. Zoöl., 78, pp. 37-54).

Hyla aurea ulongae subsp. nov.

Type.—California Academy of Sciences No. 83,235, a ♂ from Ulong, northeastern New South Wales. Collected by J. R. Slevin, January 28, 1948.

Diagnosis.—This frog, uniformly plumbeus above, immaculate white below, is characterized by a single series of vomerine teeth between, and level with, the anterior borders of the choanae. Undoubtedly closely related to *aurea* from which it may be distinguished as follows:

1. Length of inner metatarsal tubercle contained 3 to 3½ times in its distance from the tip of the inner toe..... 2
- Length of inner metatarsal tubercle contained 2 to 2½ times in its distance from the tip of the inner toe; dorsolateral fold indistinct or discontinuous; vertebral and dorsolateral light lines usually absent though sometimes indicated in the young..... 3
2. Dorsum with more or less strongly developed warts, rarely smooth; dorsolateral fold broken up into a chain of warts and not extending to the groin; a vertebral light line usually indicated; dorsolateral light lines frequently broad and discontinuous, being less sharply defined than in typical *aurea*; range: Northern Territory; Western Australia; Victoria; Tasmania
- a. raniformis* (Keferstein)
- Dorsum almost or quite smooth; dorsolateral fold continuous from eye to groin; no light vertebral line; a light line along the dorsolateral fold and another from beneath the eye to the shoulder; range: New South Wales (introduced into New Caledonia & New Hebrides) *a. aurea* (Lesson)
3. Dorsum smooth; entire underside, including axillae, groins, concealed surfaces of femora, tibia and tarsi, uniformly white; range: New South Wales..... *a. ulongensis* *subsp. nov.*
- Dorsum warty; axillae, groins, concealed surfaces of femora, tibiae and tarsi, black with conspicuous, round, yellow spots; range: south Western Australia..... *a. cyclorhynchus* (Boulenger)

Description.—Head slightly longer than broad; snout subacuminate, its length (to anterior corner of eye) slightly less than the distance separating the anterior corners of the eyes; nostril considerably nearer the end of the snout than it is to the anterior corner of the eye; canthus rostralis not very distinct; loreal region oblique, concave; interorbital space the width of an upper eyelid; diameter of tympanum two-thirds that of the eye; tongue large, not or but slightly emarginate behind, slightly free; vomerine teeth strongly developed in a *single*, slightly curved series between, or anteriorly on a level with, the front of the choanae.

Fingers free of web, first shorter than second, which is shorter than fourth, which is shorter than the third, disk of the third rather more than half the diameter of tympanum; toes well webbed, the web extending halfway between the distal tubercle and disk on the first, to the disk on the second, third, and fifth, to just beyond the second tubercle on the fourth toe, in other words the terminal joints free of web from first to fifth are, ½, 0, 0, 2, and 0; subarticular tubercles well developed; an oval inner, but no outer, metatarsal tubercle; tibio-tarsal articulation of the adpressed hind limb reaches the nostril.

Skin above smooth; a curved supratympanic fold; forearm smooth, without dermal ridge or series of tubercles; being a male there is a partly pigmented nuptial swelling at base of first finger; no lappet on heel; a rather inconspicuous dermal ridge along outer edge of foot. Below, throat and breast smooth; belly and thighs granular.

Color.—Above, uniformly plumbeus. Below, immaculate white.

Size.—Total length from snout to anus of holotype ♂, 49 mm., hind limb 82 mm.

Remarks.—The foregoing key is based principally on the findings of Parker (1938, Ann. Mag. Nat. Hist. [11], 2, pp. 302-305), who untangled the involved status of *aurea* and was correct in thinking that my *aurea* (1935, Bull. Mus. Comp. Zoöl. 78, p. 49) consisted of more than one form. In fact, all our material there listed from sixteen localities was *H. a. raniformis*, except for the one Sydney frog, which was *H. a. aurea*, and the Merredin series that, as indicated, is intermediate between *aurea* and *cyclorhynchus*, the inner metatarsal of most of them being contained 2 to 2½ times in its distance from the tip of the inner toe, but very definitely 3 times in one adult. For this reason I am treating *cyclorhynchus* as a race, instead of a full species as Parker has done and as its distribution may yet require.

